



# NOAA FISHERIES

Pacific Islands  
Fisheries  
Science Center

## Highlights of the Climate Science Strategy

# Pacific Islands Regional Action Plan



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# What's... *At Risk? Changing? The Best Strategy?*

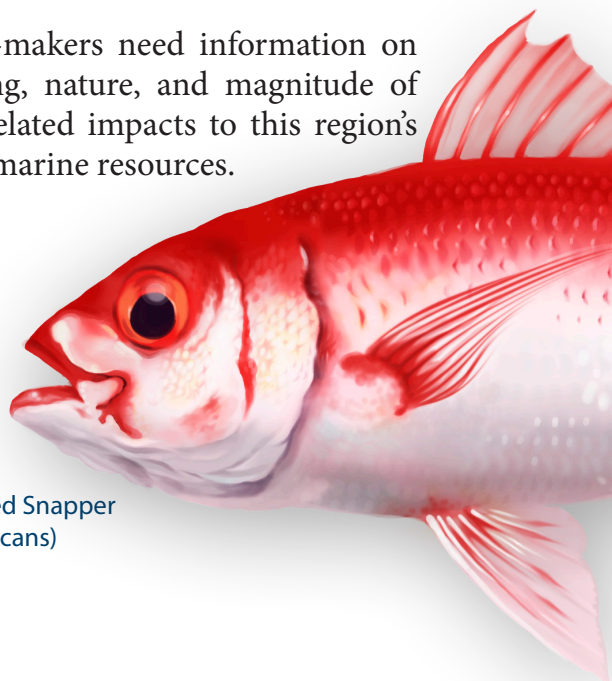
## The Need for Action

The Pacific Islands Region spans both the South and North Pacific, from American Samoa to the Northwestern Hawaiian Islands and from the main Hawaiian Islands to the Commonwealth of the Northern Mariana Islands. The region hosts a wide array of living marine resources from bigeye tuna, one of the most valuable, to coral reefs, one of the most at risk from climate change.

The Pacific Islands are expected to see increased ocean temperatures, rising sea levels, increased ocean acidity, lower ocean productivity, and changes in ocean currents, weather patterns, and extreme weather.

Many of these changes have already been observed and are projected to intensify further. Ecosystems and communities will be impacted by these changes in many ways.

Decision-makers need information on the timing, nature, and magnitude of climate-related impacts to this region's valuable marine resources.



**Onaga**  
Long-Tail Red Snapper  
(*Etelis coruscans*)

# What's at Risk?

**Climate-related changes are already impacting the distribution and abundance of marine resources**, and these impacts are expected to increase with continued changes in our climate and ocean systems.

Coral reef ecosystems are being stressed by both increasing ocean temperatures and increasing ocean acidification. Loss of coral reef habitat negatively impacts both coral reef ecosystems and the humans who depend on them.

Low islands in the region are facing rising sea levels, resulting in the loss of coastal habitat for humans as well as sea turtles, sea birds, and monk seals.

Rising sea levels are also resulting in salt water intrusion, threatening freshwater and agriculture.

Climate change is projected to reduce the Hawaii-based longline fishery's yield by up to 50% by the end of the century, resulting in a loss of food and economic resources.

## **The Pacific Islands seafood industry plays an essential role in the U.S. economy.**

(Statistics from Fisheries Economics of the United States, 2014)

Landings

**33**

million pounds

Landings  
Revenue

**\$101**

million

Jobs

**9,546**

Sales Impacts

**\$743**

million





# Pacific Islands Regional Action Plan

*The Regional Action Plan identifies key needs and actions over the next five years to implement the NOAA Fisheries Climate Science Strategy in this region. The Strategy identifies seven key information needs to fulfill NOAA Fisheries mandates for fisheries management and protected species conservation in a changing climate.*

## Recommended Actions by Objective

### Objective 1 – Identify climate-informed reference points

- Incorporate climate data into bottomfish and billfish stock assessments
- Begin incorporating climate impacts in coral reef annual catch limits
- More fully address climate impacts on fishery and protected species reference points

### Objective 2 – Create robust management strategies for a changing climate

- Conduct management strategy evaluations to identify strategies that are robust under climate change scenarios
- Incorporate climate information into Fishery Ecosystem Plans

### Objective 3 – Incorporate adaptive decision processes

- Design adaptive decision processes for management
- Incorporate climate information into management designations of protected species critical habitat and recovery planning

### Objective 4 – Project future conditions

- Describe projected oceanographic impacts from climate change
- Conduct coral reef and fish vulnerability assessments
- Project impacts of climate change on fishery yield, ecosystem structure, and fishing communities

**The Regional Action Plan goal** is to increase the production, delivery, and use of climate-related information to help reduce impacts and increase resilience of the region's living marine resources and resource-dependent communities.

NOAA Fisheries' Pacific Islands Fisheries Science Center is collaborating with others around the region to acquire needed scientific data and information for science-based strategies that sustain fisheries, healthy ecosystems, and coastal communities. This science will be used to inform policy and management decisions. "Climate-ready" management will be precautionary, preemptive, and flexible enough to respond rapidly to changing environmental conditions.

#### **Objective 5 – Understand how things are changing and why**

- Initiate laboratory and field studies to determine mechanisms linking environmental change and ecosystem response
- Develop economic models to assess trip costs and fisher participation under future climate conditions
- Build physiologically-based models to understand climate impacts on protected species

#### **Objective 6 – Track changes and provide early warnings**

- Continue living marine resource assessments and ecosystem monitoring
- Develop and track climate indices for Council's annual reports

#### **Objective 7 – Build our science infrastructure**

- Expand monitoring of climate impacts on key ecosystems, species, and habitats
- Participate in local, national, and international trainings, workshops, working groups, and conferences
- Regularly publish climate and ecosystem research



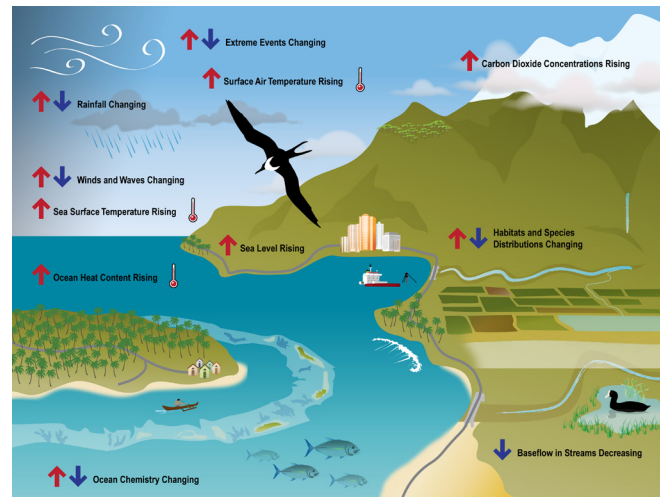
**To learn about actions not listed and related information, please visit the Regional Action Plan:**  
[www.pifsc.noaa.gov/do/pacific\\_islands\\_regional\\_action\\_plan.php](http://www.pifsc.noaa.gov/do/pacific_islands_regional_action_plan.php)

# Moving Forward

*Implementing this plan will begin to provide the climate-related information needed to better understand, prepare for, and respond to climate impacts on marine resources and the people who depend on them.*

## The actions will help:

- Track climate-related changes.
- Produce better forecasts.
- Identify effective management strategies in the face of changing climate and ocean conditions.
- Provide decision makers with the information they need for climate-ready decisions.



Key indicators of changing climate and ocean conditions in the Pacific Islands region.  
From: *Climate Change and Pacific Islands: Indicators and Impacts*,  
Pacific Islands Regional Climate Assessment, 2012.



**A critical element of this Action Plan is partnerships.** The challenges are great, the issues are complex, and resources are limited. By working together, we can reduce the impacts of changing climate and ocean conditions on living marine resources, and increase the resilience of these valuable resources and the people, businesses, and communities that depend on them.





## More Information

### Regional Action Plans

[www.st.nmfs.noaa.gov/ecosystems/climate/rap](http://www.st.nmfs.noaa.gov/ecosystems/climate/rap)

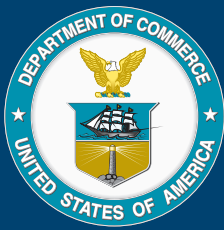
### NOAA Fisheries Climate Science Strategy

[www.st.nmfs.noaa.gov/ecosystems/climate/national-climate-strategy](http://www.st.nmfs.noaa.gov/ecosystems/climate/national-climate-strategy)

### Pacific Islands Fisheries Science Center

[www.pifsc.noaa.gov/do/pacific\\_islands\\_regional\\_action\\_plan.php](http://www.pifsc.noaa.gov/do/pacific_islands_regional_action_plan.php)

**All photos courtesy of NOAA, photo of spotted dolphins (above) NOAA Fisheries permit 15240, photo of Hawaiian monk seal (above left) NOAA Fisheries permit 10137.**



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